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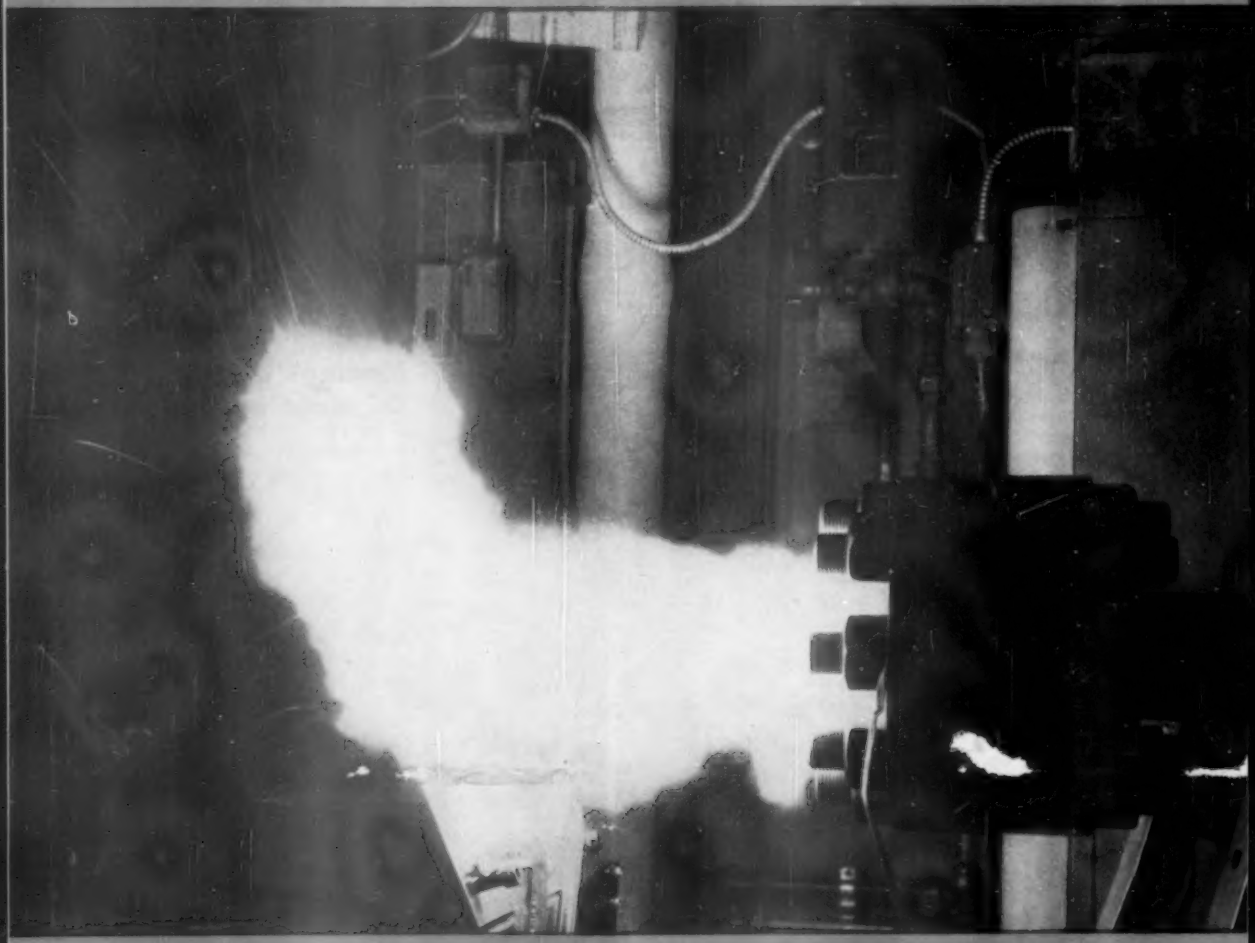
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Dust Bombardment

See Page 229

A SCIENCE SERVICE PUBLICATION

MEDICINE

Can Predict Sex of Baby

➤ EXPECTANT PARENTS can know whether the baby will be a boy or a girl almost as soon as they know a baby is coming. They can, that is, if doctors can find a safe way to get from the mother's body the fluid needed for the test.

Of course even at the earliest that this test could be made, it would be too late to change the unborn baby's sex.

Findings showing that the baby's sex can be told before birth have now been reported by three groups of scientists: Dr. Landrum B. Shettles of Columbia University, New York, (See SNL, Feb. 11); Drs. Leo Sachs and Mathilde Danon of the Weizmann Institute of Science, Rehovoth, Israel, and Dr. David M. Serr of Rothschild-Hadassah University Hospital, Jerusalem, Israel; and Drs. E. L. Makowski, K. A. Prem and I. H. Kaiser of the University of Minnesota Medical School, Minneapolis. The last two groups report their findings in a communication to *Science* (March 30).

All three groups make their pre-birth sex predictions by examining cells found in the amniotic fluid which surrounds the baby in the womb. The cells in this fluid come from the baby. The sex chromatin body which shows the baby's sex can be seen in these cells when they are examined under the microscope.

The Israeli scientists report having determined sex of babies in the sixth and seventh months, that is, two and three months before birth. And they point out that amniotic fluid can be obtained from living human fetuses from 12 weeks on to birth.

Science News Letter, April 14, 1956

MEDICINE

Stomach Ulcer Danger

➤ One out of every four stomach ulcers "harbors stomach cancer," the American Cancer Society announces.

The figure is from a study by Dr. Mark A. Hayes of Yale University School of Medicine. Dr. Hayes reviewed the histories of patients with ulcer symptoms treated over the 20-year period 1929-1949 in New Haven. He found that 468 of the patients turned out to have stomach cancer.

Only one in 100 stomach cancer patients survived five years during the period of study. Modern treatment methods have raised this to between five and 10 per 100 five-year survivors.

Of those operated on within four weeks of the appearance of the stomach ulcer symptoms who were found to have a cancer, 66 of every 100 survived, Dr. Hayes found.

The moral, he said, is to operate soon after stomach ulcer is diagnosed and is found not to respond to the usual medical treatment.

Best way to determine whether stomach ulcers contain cancer cells is to remove the tissues and examine them under the microscope. Any other method is uncertain, Dr. Hayes said.

In his study, the size of the ulcer, its location in the stomach and analysis of the stomach contents were unreliable for distinguishing between ulcer and cancer.

X-ray pictures gave a correct diagnosis in only one-half the cases.

Science News Letter, April 14, 1956

PLANT PHYSIOLOGY

Plants Have Own Clocks

➤ PLANTS have their own clocks, and these clocks tell them when to send out their first flowers, when to prepare for winter, and even, as seeds, when to sprout.

Animals have similar clocks which serve a like purpose.

Dr. Sterling B. Hendricks, U. S. Department of Agriculture chemist, reports some of the relationships between the problems of plant and animal adjustment and their time-telling mechanisms in a paper prepared for delivery to Sigma Xi audiences across the country.

Light-sensitive pigments in plant leaves are the clocks with which plants measure time. Knowledge of animals' ability to measure time is still largely descriptive, but it is easy to see how a shrimp in an ice-covered pond might know that the water will soon be warm because the nights are growing shorter.

Dr. Hendricks says his lecture is intended as a philosophical discussion of the methods of science.

"I intend to indicate how science starts with some very strange procedures to learn what often become commonly accepted truths," the USDA chemist declares.

Some of these "strange procedures," according to Dr. Hendricks, are well illustrated in investigations of the responses of plants and animals to changing seasons.

The first step in the investigations, begun a quarter of a century ago, involved overcoming the prejudice that seasonal change in living things depends solely upon temperature and demonstrating that photoperiodism exists. Photoperiodism is the influence of length of day and night on plant and animal growth and reproduction.

Science News Letter, April 14, 1956

PSYCHOLOGY

Demand for Surgery May Be Suicide Attempt

➤ THE PATIENT who insists on having a surgical operation he does not really need may unconsciously be trying to commit suicide, Drs. Charlyne T. Seymour and A. Estin Comarr of the Veterans Administration Hospital, Long Beach, Calif., told the Western Psychological Association meeting at Berkeley.

They told of a patient who continued to complain of pain in the neighborhood of an injury received in service in 1942.

Doctors finally resorted to a brain operation (prefrontal lobotomy) in the hope of preventing the patient's addiction to narcotics he took to ease his pain.

The operaton failed to control his pain or stop his addiction. He should have been treated for his suicidal drives, the psychologist said.

Science News Letter, April 14, 1956

PHYSIOLOGY

Findings Upset Theory Of Bleeding Control

➤ A THEORY about normal control of bleeding which scientists have held for nearly 40 years is upset by findings of scientists at the National Heart Institute, Bethesda, Md.

The findings and the theory are about a chemical called serotonin. This is found in the brain and in the blood platelets, tiny disc-shaped corpuscles throughout the blood. Serotonin can constrict blood vessels. Almost from the time of its discovery in 1918 scientists thought that when it was set free from ruptured platelets in wounds it slowed bleeding and encouraged blood clot formation.

Now the heart institute scientists find that when they give reserpine, a tranquilizing and blood pressure lowering drug, to laboratory animals, serotonin is set free from blood platelets.

More than 90% of the serotonin can be set free from the blood platelets by this method. But the time for wounds to stop bleeding in rats, rabbits and guinea pigs is the same as for animals not treated with reserpine. This means that serotonin is "unlikely" to function in control of bleeding.

The findings were made by Drs. Parkhurst A. Shore, Bernard B. Brodie and associates and are reported in the *Journal of Pharmacology* and *Experimental Therapeutics*.

Science News Letter, April 14, 1956

PHYSICS

Super Atom Smasher

Apparatus in planning stage will hurl atom hearts at each other at energies 200 times the highest now available. Name proposed is "synchroclash."

➤ A SUPER ATOM SMASHER to hurl hearts of hydrogen atoms at each other with energies nearly 200 times the highest now available is in the planning stage.

Bigger and more powerful machines to speed up the elementary particles of which atoms are made were a top topic at informal sessions among scientists attending a nuclear physics conference at the University of Rochester in Rochester, N. Y.

Suggested name for the proposed accelerator is the "synchroclash." It would actually be two machines whose atomic bullets smack head on into each other, instead of the single beam crashing into a stationary target of present machines. This could give protons energies of 1,000 billion electron volts or more.

Plans for such a super atom smasher are being studied by Midwestern Universities Research Association, composed of 20 universities.

Particle accelerators now under construction or planned have about reached the upper size limit, and scientists are being forced to use "tricks" to reach higher energies.

One trick is to use a very complicated magnetic field, known as alternate gradient, for focusing speeding particles. The higher the energy, the closer a particle is to the speed of light, limiting velocity according to Einstein's theory of relativity.

The three Russians attending the Sixth Annual Conference on High Energy Nuclear Physics revealed Soviet plans for building an accelerator to reach 50 billion electron volts, or 50 BEV, using this principle.

CERN, a joint enterprise of 12 European nations, and Brookhaven National Laboratory on Long Island are now building atom smashers that will operate at 25 billion electron volts, also using the alternate gradient idea.

The newest trick is to smash one bunch of high velocity particles into another group of speeding atomic fragments, as in the synchroclash. And if two atom smashers, each accelerating protons to 15 billion electron volts were built and a bunch of hydrogen hearts from one were aimed at the other, the resulting collisions would equal 1,000 billion volts in energy. An accelerator operating now reaches the highest energy in the University of California bevatron with a top energy of six billion electron volts. The first authentic example of anti-matter, the anti-proton, was discovered in this machine last fall.

Russian scientists expect to have a 10 billion volt machine operating within a year.

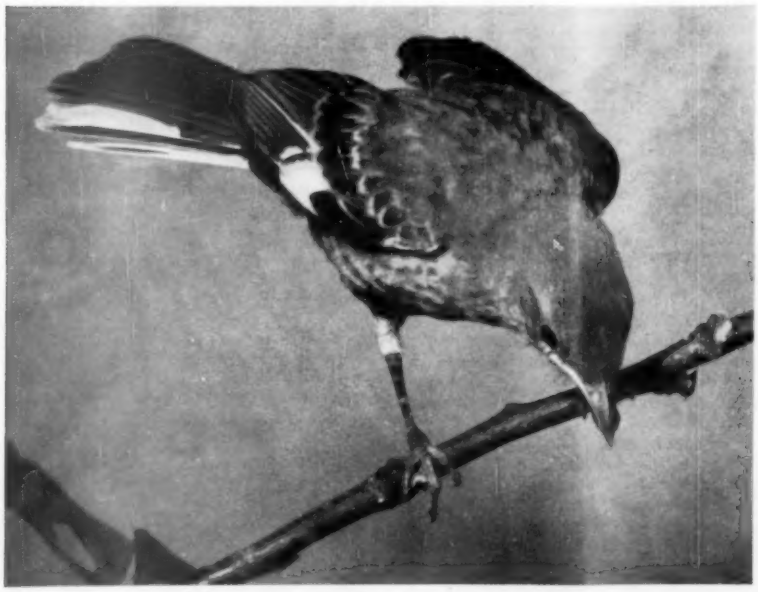
Scientists build atom smashers with higher and higher energies to create and study new particles, as well as to examine in more detail those already known to science.

Cosmic rays, atomic radiation continually smashing into the earth's outer atmosphere, result from the most powerful accelerator known — but whether from the sun, from other stars, from our Milky Way galaxy or from the universe itself is still to be determined.

Man-made machines are now beginning to duplicate the lowest part of cosmic rays' energy range.

Other particles of anti-matter will probably be discovered as the new U. S. and Russian accelerators now being built start operation.

Science News Letter, April 14, 1956



MOVING NORTH—The mockingbird, whose song once charmed only the Southland, has been gradually spreading out toward the north. It is now reported as far north as Maine, Quebec and Newfoundland.

PUBLIC HEALTH

Clear Washington of Alcoholic Reputation

➤ THE NATION'S capital is cleared of any alcoholic reputation it has had by a study by Mark Keller and Vera Efron of the Yale University Center of Alcohol Studies.

San Francisco had the highest alcoholism rate of all U. S. cities for the year studied, 1950. Its rate was 16,760 alcoholics per 100,000 population over age 20. By contrast, Washington and the District of Columbia which are coextensive had less than half that rate, 7,040 per 100,000 population over age 20. This is about the same as the rates for Chicago, Philadelphia and Pittsburgh and very little more than the approximately 6,000 per 100,000 rates for the much smaller cities of Pasadena, Calif., Utica, N. Y., and Little Rock, Ark.

Lowest alcoholism rate for the nation's 12 largest cities was Baltimore's of 5,120. New York had a rate of 6,200.

Whatever there is about city life that goes with alcoholism, it does not seem to be population density, the scientists point out in their report to the Quarterly Journal of Studies on Alcohol. For example, cities with between 100,000 and 200,000 population such as Wilmington, Del., or Sacramento, Calif., show much higher rates of alcoholism than a metropolis of millions, such as Chicago or New York.

Some states with many large cities, such as Massachusetts and Pennsylvania, have a number of large cities with alcoholism rates that are not much different from or even smaller than the rates of the less urban parts of the states. Big city rates in general, however, tend to have a higher rate than do the less urban parts of the states in which they are located.

Akron, Ohio, where Alcoholics Anonymous was founded, has a rate very little

above the less urban parts of Ohio and well below most of the other large cities in the state.

Cities with the lowest rates in 1940 generally showed increases in 1950 far greater than cities with the highest rates in 1940. This is believed mainly due to improved reporting of basic medical information.

The rates in the 12 largest cities of the nation were on the average almost twice the rates of the 12 smallest big cities, that is, cities with populations of 100,000 or more.

Science News Letter, April 14, 1956

POLICE SCIENCE

How Typing Is Disguised

French police scientist warns American colleagues of methods by which criminals alter typing or file down letters on machine to avoid detection.

➤ POLICE in this country are warned of two methods by which criminals disguise typing or typewriters to avoid detection as the source of threatening letters and other criminal documents.

The warning is published in Chicago in the *Journal of Criminal Law, Criminology and Police Science* (April). It is contributed by Jean Gayet of the staff of the Police Laboratory in Lyon, France.

The first method is very simple. The criminal (whom M. Gayet calls the "malefactor") uses two sheets of paper and one carbon sheet. Between the top sheet and the carbon, he puts a piece of coarse cloth. Then it is the carbon copy that is sent to the victim.

The writing on this copy has a canvas-like appearance which may appear to the police expert as the work of a multigraph or some other duplicator rather than a typewriter. To identify it as carbon, the expert should use a magnifying glass, M. Gayet suggests. If the writing was disguised by use of a cloth, the expert will see a multitude of little colored dots close around each letter.

Do not try to measure the exact height of the letters. This is difficult enough if the typing was done through a fine ribbon. When done through a coarse cloth, it is completely deceptive. It is possible, however, to determine whether the letter was written with elite or pica type.

It is also hopeless to try to recognize the breaks or recesses in the metal due to use. It is possible to note defects in alignment of letters, whether a particular letter prints too high or too low or too much to the right or the left.

The other method of disguise is done after the criminal letter has been written. The criminal files the keys on his machine so that samples of typing from it will not match the typing in the criminal letter.

Remedy is to examine the machine itself. Notice whether the alterations affect little-used symbols such as %, &, or / as much as such letters as e, i, or o.

If it is not possible to seize the suspected typewriter for examination, get samples of typing some time before the crime as well as since. If the recently made impressions show signs of "wear" that would not be expected in such a short time, that in itself is a good sign that the typewriter has been tampered with and is evidence of guilt.

Science News Letter, April 14, 1956

AERONAUTICS

Missiles to Carry Freight

➤ GUIDED MISSILES may be carrying a portion of the nation's air freight by 1966, Dr. Simon Ramo, executive vice-president of the Ramo-Wooldridge Corporation, Los Angeles, told the American Rocket Society meeting in Princeton, N. J.

In making his prediction, Dr. Ramo said that even the transportation of passengers will be under precise guidance or automatic control from take-off to landing, even though a pilot will still be present.

Dr. Ramo used guided missiles as an illustration of how complex systems engineering is changing the role of the scientist, as well as the nation's entire industrial make-up.

Guided missile developments of today, he stated, are merely the forerunner of a vast automating of industry, business and transportation. The development of "synthetic" intelligence devices, such as electronic "brains," will have the most major of consequences, peace or war, Dr. Ramo told the Society.

A stumbling block to the march of progress in these directions, Dr. Ramo cautioned, will be the shortage of technically skilled personnel.

Both educational methods and the training of scientists and engineers brought about by complex systems engineering will be changed, he predicted.

The coming decades will be distinguished in industry by the growth of the technical manager, and technical considerations will dominate over more conventional factors in determining the success of industries engaged in highly complex and new products.

Dr. Ramo reported to the Society that the challenging nature of these complex scientific and technological systems, as illustrated by guided missile developments, has already meant a meshing of all the sciences. The widespread teaming of physicists with engineers, and of carefully controlled experiments and unusually deep theoretical analyses, applies over the whole spectrum of new technological developments.

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PHYSICS

Stop Atomic Pile Clogging

Study of how tin atom changes from stannous to stannic form is effort to find way to eliminate fission by-products that can halt pile reaction unless removed.

➤ ATOMIC PILES of the future may be able to run without becoming clogged by fission-produced by-products, including tin, if research now underway in Michigan State University's chemical laboratories succeeds.

Dr. Carl H. Brubaker Jr., assistant professor of chemistry, is studying how the tin atom changes from stannous to stannic form in an effort to determine the exact nature of tin and tin compounds.

Dr. Brubaker's study concerns the fundamental nature of the tin atom. He uses a spectrophotometer, that gives some indication of the nature of the change from stannous to stannic form by measuring the amount of ultraviolet light transmitted through or absorbed in the solution at various states.

An Atomic Energy Commission grant supports Dr. Brubaker's project. The AEC is interested in tin because of difficulties in eliminating by-products from atomic piles.

Atomic fission produces some 34 elements, one of which is tin. If these elements are not removed, the uranium becomes clogged and diluted, causing the pile reaction to stop.

In dry atomic piles, it is usually possible to pull out a little contaminated uranium at a time, remove the tin and other by-products, reprocess and reinsert the uranium—all without stopping the pile.

In piles run in solution, it was originally necessary to stop the reaction completely to remove the tin. Now scientists often pump in new solution while pumping out old, without stopping the reaction. This does not completely remove by-products and eventually liquid piles must be stopped and impurities eliminated.

Atomic chemists want not only to remove radioactive tin from piles, but to remove it in a pure state so it can be used in tracer experiments. Tin recovered from an atomic pile is purer and easier to work with than is natural tin, which is often associated with other elements that confuse experiments.

Radioactive tin is used for metallurgy research to study tin compounds, for tests on tin corrosion and to study changes in the tin atom.

Dr. Brubaker also has thermostatic baths and refrigerated equipment to measure effect of temperature in inducing chemical reactions. The baths are accurate within 1/200th of a degree Fahrenheit. When gauges indicate temperature is about to fall, powerful infrared heat lamps flash on.

Surprisingly little is known about tin, the chemist stated. In its stannic form, tin has a valence of four, while its valence in stannous form is two.

Since valence measures the extent to which an atom is able to combine with others, this means that the combining power of the stannic type is greater. But chemists have never been able to learn exactly what happens when the element changes from one form to the other.

Science News Letter, April 14, 1956

ENTOMOLOGY

Foresee Elimination Of Insect Pests

➤ COMPLETE elimination of insect pests rather than mere control of them is foreseen by T. L. Aamodt, in testimony before a House appropriations subcommittee.

Mr. Aamodt, who is Minnesota's state entomologist, said scientists had reached the point where they could consider eradication of certain pests, such as the golden nematode and the soybean nematode.

Arguing for support of a stepped-up attack on the gypsy moth, Mr. Aamodt noted the program could be used as a test for eradication of other insects.

The gypsy moth, a two-inch, red-tufted bristled caterpillar, is advancing southward and westward from New England at an alarming rate. It recently made the "long jump" across the Berkshire Mountains to Lansing, Mich.

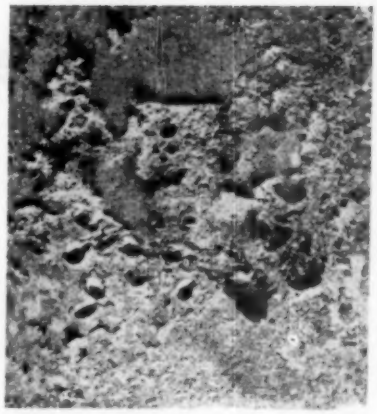
Thus there is at present no natural barrier to the destructive insects' spread throughout the Midwest, Mr. Aamodt said. Scientists had thought the gypsy moth was being successfully confined to the Northeast, but it has now broken bounds to infest a 30% larger area, nearly 9,000,000 acres in New York, New Jersey and Pennsylvania.

Strong winds associated with hurricanes probably aided its spread.

The insect, now a serious threat to forest, fruit and shade trees from the East Coast west to the Great Plains, can be eliminated from any given area at a reasonable cost, Mr. Aamodt said. He urged immediate appropriation of $1,500,000 for control work this spring, noting that an acre of land can be sprayed for each dollar allotted.

Mr. Aamodt predicted it would not be "many years" before $1,500,000,000 would have to be spent for control only if sufficient money was not appropriated immediately.

Science News Letter, April 14, 1956



DUST DAMAGE—This is what tiny dust particles could do to the surface of a missile or space satellite when the specks bombard the metal at tremendous speeds and the heat of the impact erodes the metal, tests being conducted at Armour Research Foundation show.

PHYSICS

Dust Particles May Be Threat to Space Travel

See Front Cover

➤ THE DESTRUCTIVE effect that might be caused by airborne dust particles striking against the hull of a space ship is being measured by scientists at the Armour Research Foundation of Illinois Institute of Technology, Chicago.

Particles of dust so small as to be almost invisible to the naked eye are shot against an aluminum plate. A shock tube is used to propel the particles at speeds up to 4,000 feet a second, simulating conditions in outer space. In the picture on the front cover of this week's SCIENCE NEWS LETTER the flying specks of dust give the effect of threads of light as they bounce off the metal plate.

Millions of dust particles striking the surface of a satellite vehicle can cause extensive damage to the metal.

Another source of damage to guided missiles and satellites is the erosion of metal surfaces by the intense heat generated by the friction of the air against an object in flight. This heat can cause severe damage to the exterior of the missile, create higher air resistance and thus increase the heat transfer. If the heat becomes great enough, it could vaporize at least the outer surface of the missile or satellite.

Science News Letter, April 14, 1956

There are many diseases that cannot spread unless carried by *insects.*

"Rockoons"—rockets released from balloons at top of ascent—will make scientific measurements in the upper atmosphere.

GENERAL SCIENCE

Atoms for Peace Award

➤ THE first of the world's most valuable science awards will be bestowed within the next year by a committee of seven Americans. These awards will rival the famous Nobel prizes.

The Atoms for Peace Award will be the first of its kind presented internationally for contributions to peaceful uses of atomic energy.

The final details of the Atoms for Peace Awards, first announced at the Geneva atomic conference last August, were reported in Cambridge, Mass., by Dr. James R. Killian, Jr., president of the Massachusetts Institute of Technology and chairman of Atoms for Peace Awards, Inc. The corporation and prize money are financed by the Ford Motor Company Fund.

The first Atoms for Peace Award, which includes a cash honorarium of up to $75,000 and a medal, will go to the person or group of persons nominated as having contributed more toward peaceful uses of atomic energy than anyone else during the year.

Nominations will be made by individuals and organizations, including learned societies, in any part of the world. If the trustees are unable to decide on a candidate in a given year, the award will be withheld during that year.

It is expected that scientists and engineers will usually be nominated, but the award is not restricted to members of these occupations.

Trustees and members of the awards jury are: Dr. Killian; Dr. Detlev W. Bronk, president, Rockefeller Institute for Medical Research; Dr. Ralph J. Bunche, Under Secretary of the United Nations; Dr. Arthur H. Compton, former chancellor, Washington University; Ex-President Mildred McAfee Horton of Wellesley College; Dr. Mervin J. Kelly, president, Bell Telephone Laboratories; and Dr. Alan T. Waterman, director, National Science Foundation.

Nominations will be screened by an advisory committee consisting of Dr. Robert F. Bacher, director, Norman Bridge Laboratory, California Institute of Technology; Dr. Robert F. Loeb, professor of medicine, Columbia University; Robert Lovett, former Secretary of Defense; Dr. I. I Rabi, Columbia University, Nobelist in physics; and Dr. Charles A. Thomas, president, Monsanto Chemical Co.

Science News Letter, April 14, 1956

STATISTICS

G-2 for City Police

➤ A MODERN city police department should have an "intelligence unit."

This is the suggestion of Dr. John I. Griffin of the City College of New York and lecturer in the New York Police Department.

The basic function of such a unit, he explains in a report to the *Journal of Criminal Law, Criminology and Police Science* (March-April), would be to conduct surveys on a probability sample basis. This new statistical tool is now widely used by industry and business for their decision-making problems on such greatly different matters as consumer attitudes toward package design and control over the quality of manufactured products.

Statistics were given a big push in police administration with the development of uniform crime reporting, since 1930. But crime reports can be misunderstood by the public.

People may be worried by what is really a "statistical crime wave," when intensification of police activity results in an increased total of "crimes known to the police."

The relation between this figure and the total number of crimes committed is not known except that the total crime figure is necessarily larger.

More meaningful to the public than the "number of offenses per hundred thousand population" would be information about the rise and fall of crime rate with changes in economic, social and political conditions and about the characteristics of neighborhoods where crimes take place.

Maps are available for most cities, Dr. Griffin pointed out, that show on a fairly large scale each city block with information on the characteristics of each building on the block. These maps were originally designed for use in the fire insurance business, but would be an important tool for the police "intelligence unit."

The new police unit should be manned, Dr. Griffin suggests, not by statisticians, but by experienced and practical police officers who are given special training in modern statistical methods.

Science News Letter, April 14, 1956

BIOCHEMISTRY

Leukemia Brain Extract Gives Mice Disease

➤ MATERIAL EXTRACTED from a leukemia patient's brain has caused leukemia in one strain of mice, Dr. Steven O. Schwartz of the Hektoen Institute for Medical Research at Cook County Hospital, Chicago, reports. The mice are of a strain susceptible to leukemia.

This and other phases of his research suggest that a common agent is responsible for both mouse and human leukemia, an American Cancer Society announcement said.

The agent from human leukemic brain tissue was able to survive passing through many leukemia-resistant mice without causing leukemia in them and without losing its ability to cause leukemia in susceptible mice.

This suggests that resistant animals may be carriers of the agent without ever developing leukemia.

The research is still in the preliminary stages and offers no possibility for treatment of humans now sick with leukemia. If the results are confirmed, however, they may open a broad new approach to study of the disease.

Science News Letter, March 24, 1956

PHYSICS

Light Velocity Measured Over Known Path

➤ THE VELOCITY of light has been determined by clocking the time light takes to travel between two points whose distance is accurately known by measure, a scientist reports in *Nature* (March 31).

His value is very close to that found recently by other methods. Dr. R. C. A. Edge of the geodetic control division, Ordnance Survey Office, Surrey, England, reports a value of 299,792.4 kilometers per second.

His measurements were made at the request of the U. S. Army Map Service.

Knowing light's velocity exactly is of great importance in many scientific fields, but for most everyday purposes, the speed can still be considered 186,000 miles a second.

Science News Letter, April 14, 1956

PUBLIC HEALTH

Doctors Credit Press For Informing Public

➤ THE AVERAGE doctor "gives a large measure of credit" to newspapers, magazines and television for whatever correct knowledge the public has of health and medical matters.

This finding from a series of surveys by the National Opinion Research Center, Chicago, is reported in the *Journal of the American Medical Association* (March 31).

In the survey, 500 physicians named by individuals as "my doctor" were interviewed. The average one of these 500 thinks it very important that the public be better informed than it is about health and medical matters. He blames the public itself, rather than any particular group, for the ignorance and misconceptions.

He is "generally content" with the mass education campaigns of the voluntary health agencies.

Science News Letter, April 14, 1956

ARCHAEOLOGY

Explore Lost Greek City

Thriving metropolis of three centuries before Christ buried until now is uncovered by Princeton expedition. Ancient inhabitants probably sold into slavery.

➤ AN ANCIENT Greek city, lost to sight for more than 20 centuries in Sicily is being explored by a party of archaeologists from Princeton University under the direction of Profs. Erik Sjoqvist and Richard Stillwell.

In its prime between 300 and 200 B.C., the city was a thriving metropolis of perhaps 20,000 to 30,000 inhabitants, about the size of Chillicothe, Ohio, or Ithaca, N. Y.

A brick and tile factory furnished one of the major industries of the lost city. Several large kilns have been uncovered. One of these had a capacity of about 6,000 bricks per firing. This means that the factory was large for its time and even compares well with the capacity of our own brick and tile plants up to improvements of fairly recent years when you consider that the ancient Greeks made bricks much larger than those in use today. Some of these old Greek bricks measured two feet by two feet by two feet. In addition to building bricks, the plant also made clay tubes to serve as conduits for the city's water supply and drainage system.

The life of the city came to an abrupt end about 200 B.C. It is probable that all the inhabitants were sold into slavery after the Punic Wars in which the city probably took part.

Within 25 years after its most flourishing period this busy city was covered by ten feet of earth. On top of this earth covering the scientists found remains of a newer and smaller community, the architecture of which is Roman. This town lasted up to about 60 B.C.

The site was overgrown by forest in the time of the Roman Empire. It slept quietly during the rise and fall of the Byzantine Empire, the period of Arab domination and the Norman Kingdom. For the past four centuries, nearby farmers have grown wheat and pastured their flocks over the lost city.

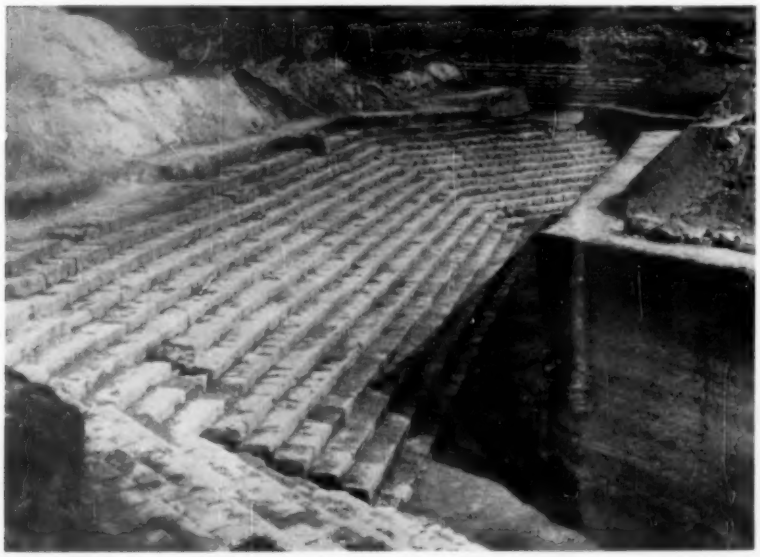
The city, which still remains nameless, was rediscovered in 1953 by Prof. Sjoqvist.

Particularly interesting to archaeologists is the finding of a series of monumental flights of steps leading from the lower to the upper levels of the Agora, or civic center. Prof. Sjoqvist believes this served not only as a simple stairway but also to give sitting or standing room for public assemblies at state and religious ceremonies. The Agora is located about a mile away from the hilltop on which the city's fortress, or Acropolis, was found.

Site of the city is located in the hilly, little-known interior of Sicily on Serra Orlando.

It is estimated that the Princeton party will be in the field for about five years.

Science News Letter, April 14, 1956



FOR PUBLIC ASSEMBLIES—These steps recently unearthed in a twenty-two-hundred-year-old lost city of the Greeks in Sicily presumably served not only for everyday climbing up and down from one level to another of the Agora, or civic center. They also may have furnished standing room for large crowds at public assemblies and religious ceremonies. The lost city, the name of which is unknown, is being explored by Princeton archaeologists.

ARCHAEOLOGY

Florida Indians Used Oriental Porcelain

➤ FLORIDA Indians used rare Chinese and Japanese porcelain in the 17th and 18th centuries, finds at Florida archaeological sites indicate.

Fragments of oriental porcelain of the late Ming and early Ch'ing periods have been recovered in Indian trash heaps from north Florida to near the state's southrn tip, Dr. Hale G. Smith, Florida State University archaeologist, has disclosed.

These finds do not mean there was any direct contact between the Indians and the Orient, Dr. Smith pointed out. The Indians probably came into possession of the Chinese and Japaneses ceramics from salvaging Spanish treasure ships wrecked on the Florida coast, from pirates and from Spanish colonists and missionaries.

During the 16th, 17th and 18th centuries, there was a lively trade between China and the Philippines, then a Spanish colony. The Spaniards shipped great quantities of oriental porcelains from the Philippines to Acapulco, Dr. Smith said. From there they were carried overland across Mexico, and were shipped on to Spain from Vera Cruz, on the Gulf of Mexico.

Spanish treasure ships often sailed through the Bahamas Channel, near the Florida coast. Many of the ships were wrecked in the treacherous waters, and Florida Indians were able to salvage some of the cargoes.

They may also have obtained porcelains from colonists and missionaries and from pirates, Dr. Smith said.

Dr. Kamer Aga-Oglu, authority on oriental ceramics with the University of Michigan, Ann Arbor, has studied several of the fragments. She identified 16 blue and whites of the late Ming and early Ch'ing periods; two blue and whites with additional overglaze of the early Ch'ing; and one possibly K'ang Hsi powder-blue base sherd.

All of these specimens were of very fine quality and of good workmanship, a fact which points to origin from Ching-te Chen, Dr. Aga-Oglu said.

Other Florida archaeological specimens examined included a small group of Japanese blue and white pieces.

Dr. Smith and Dr. Aga-Oglu reported their research in the journal, *Florida Anthropologist* (Dec. 1955).

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ENTOMOLOGY

Treat Cotton Seeds to Kill Spring Insects

➤ COTTON seeds can now be treated so that, after they germinate, early-season insects feeding on the cotton plants will be killed.

The newly developed cotton seed insecticide, named Thimet by the American Cyanamid Company, its producers, has been approved by the U. S. Department of Agriculture and is being produced commercially. However, the insecticide will be sold this year to seed treaters in Mississippi and Texas only. The product will be made available in all cotton growing regions of the United States in 1957. Distribution to several foreign countries is also planned.

The insecticide is expected to eliminate the early season spraying and dusting which has been necessary up to now. Thimet remains in the cotton plant and continues to kill insects for up to seven weeks after the first sprout has appeared.

Experiments are being conducted to increase protection time.

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GENERAL SCIENCE

British to Drop A-Bomb in South Australian Desert

➤ THE FIRST ATOMIC BOMB ever to be launched from a British aircraft will be dropped in Australia in November.

The bomb will be dropped from a Valiant bomber, which is reported to fly more than 700 m.p.h. Valiant bombers have been flying for six months developing bomb-dropping techniques at the Woomera ballistics range.

The British Commonwealth will stage two series of atomic tests this year, one at the Monte Bello islands, off West Australia, in April, and later this year at Maralinga, the new $12,000,000 permanent testing range.

Reports until now were that British scientists would be testing an "atomic trigger." The "trigger" is the firing device for the hydrogen bomb.

Although atomic bombs have been used to generate the necessary heat to "trigger" the hydrogen bombs so far exploded, there has never been any explicit statement that an atomic bomb would be used in the Australian tests.

Last year supply minister Howard Beale indicated Britain's atomic tests on the Australian mainland this year would be with the atomic "trigger" of a hydrogen bomb. At that time he denied reports that Britain planned to explode an H-bomb in the tests, but said that the experiments planned could be useful in the development of a hydrogen bomb.

Australian and British members of Parliament will see the atomic explosions in Australia later this year. It will be the first time parliamentarians have been permitted to see atom-bomb tests.

The tests, fourth in Australia, will be held at Maralinga, 500 miles west of Woomera. Sir William Penney, leader of the British scientific team, will try out some altogether new devices.

Canadian experts, scientists and servicemen will take part in the Maralinga tests.

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ICHTHYOLOGY

"Strange" Fish Fools Fishermen

➤ EXPERIENCED Chesapeake Bay fishermen have been baffled this spring by what they thought was a strange, new species of herring.

The fish, it turns out, are glut herring with immature roe.

The glut herring have been appearing along with the regular catch. Although they constitute most of the herring caught in Chesapeake Bay, glut herring normally do not appear until later in the season when their roe are fully matured.

William H. Massmann, fisheries biologist at the Virginia Fisheries Laboratory, Gloucester Point, Va., has examined a number of the fish and said definitely they are glut herring.

"These glut herring with immature roe are so long and thin that they are mistaken by some people for a different kind of fish. Usually they do not apear in great abundance until late April and May, when, as their name implies, they often glut the market," Mr. Massmann says.

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PSYCHOLOGY

Harshness of Teacher Comes With Experience

➤ IF your little boy comes home from school with the complaint that his teacher is "tough," he may be right. But the fault may not be with the personality of the teacher; it may be a result of her contact with her pupils.

The young, inexperienced teacher newly graduated is gentle with her pupils, Dr. Maurice F. Freehill of Western Washington College of Education, Bellingham, Wash., reported to the Western Psychological Association meeting in Berkeley, Calif.

During the first ten years of teaching the teacher becomes harsher. The veteran with more than ten years experience mellows and is milder than the younger teacher, Dr. Freehill found.

High school and elementary teachers are harsher than junior high and primary teachers.

Results on personality tests were not related to harshness except for extremes. Teachers who are quite maladjusted are inclined to be harsh. Dr. Freehill's conclusions are based on study and tests of 445 teachers.

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IN SCIEN

MEDICINE

Smoking Tempo Fails To Affect Chemicals

➤ VARYING the tempo at which cigarettes are smoked does not affect the cancer-causing chemicals found in the smoke, Dr. M. J. Lyons of the Royal Beatson Memorial Hospital, Glasgow, Scotland, reports in *Nature* (March 31)

Dr. Lyons repeated experiments of other scientists who had found the cancer-causing 3,4-benzpyrene in smoke from cigarettes smoked in an automatic fashion with strictly regular intermittent smoking. But to make the smoking more like that in normal human cigarette smoking, Dr. Lyons varied the time for smoking an ordinary cigarette to between seven and 12 minutes. During the course of the smoking, two four-second draws were made.

He found "essentially the same" range of polycyclic hydrocarbons in the smoke, including the cancer-causing ones, as earlier scientists had reported and also some additional ones.

Besides the 3,4-benzyprene, Dr. Lyons found 1,2-benzanthracene, which has been reported to have "medium" cancer-causing power.

What effect these two compounds, acting together along with two other benzpyrene-like chemicals found in the cigarette smoke, will have on the body is hard to assess, Dr. Lyons states. A wide range of effects, from blocking each other out to increasing the effect of each, is conceivable.

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STATISTICS

Home Accidents Rank With Auto's

➤ HUMBLE or not, there is no place like home for fatal accidents, it seems from figures just announced by statisticians of the Metropolitan Life Insurance Company in New York.

The death toll from home accidents in 1955 was almost twice that for work accidents and one and two-thirds times that for public accidents other than those involving motor vehicles.

Only motor vehicle accidents took a greater number of lives throughout the nation as a whole.

The four million non-fatal injuries in and about the home each year are three times the number of non-fatal motor vehicle injuries.

Falls, such as out of windows, off the roof, out of trees, out of bed and slipping on the floor, led in home accidents, accounting for about half the deaths.

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CE FIELDS

PHYSIOLOGY

Australian Navy Seeks Hints From Whales

➤ AUSTRALIAN navy experts are studying whale habits in the hope of picking up hints to make the use of frogmen and underwater warfare techniques more efficient.

The Minister for the Navy, Senator N. O'Sullivan, said the studies would also help amateur divers using breathing apparatus.

He said that a whale when harpooned could immediately dive for at least 500 fathoms and rise to the surface again.

Humans could rise only from a maximum depth of 150 feet without getting the agonizing "bends" caused by quick ascents.

Study of the metabolism, heart beats, general physiology and anatomy of whales might help to modify the limits imposed on frogmen and divers and eliminate "staging" of divers from great depths.

A group of 50 naval medical officers is studying whales and underwater medical problems. Results of overseas research are also being followed.

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BIOLOGY

Trace Tree Cancer Back To First Abnormal Cell

➤ A TREE TUMOR can now be traced to the exact single cell that first went wild in cancer 60 years ago. The season when disease first struck the tree can even be pinpointed as definitely as, for example, April, 1892.

Tracing the history of a tumor to its original cell cannot be done for animal and human cancers. It has been achieved in the case of trees by Dr. Philip R. White and associates at the Roscoe B. Jackson Laboratory, Bar Harbor, Maine.

They were able to do it by counting the annual rings of a tree cross section back to the first cell that became abnormal and from which the tumor developed.

The tree tumors studied have raged in an epidemic among white spruce trees along a narrow band of land on Mount Desert Island, Maine, and nearby coastal regions. The cause is a mystery. Injury by high winds and salt sea spray blowing in from the North Atlantic is a possibility.

Another possibility, for which there is as yet no evidence, is that a virus causes the tumors, possibly gaining admission through a wound in tree tissues already irritated by sea water.

The fact that other types of trees are not affected may indicate a hereditary susceptibility. Something in the chemistry of white spruce cells, a chemistry under the direction of genes, may make it possible for the tumor-causing agent to affect these trees only.

Dr. White has devised a medium composed of pure chemicals in which tree tissues can be grown in test tubes. This medium contains the essential foods required by the tissues, usually a food composed of less than 30 well known chemical ingredients.

The scientists have found that the nutritional requirements of normal and tumor cells are different. Tumors require more or less of several nutrients than do normal tissues.

Dr. White's research is supported by the American Cancer Society, which announced the results so far.

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ENTOMOLOGY

Mysterious Virus Fatal to Army Worm

➤ A MYSTERIOUS VIRUS that is fatal to the lawn-ravaging army worm has turned up in Hawaii.

Entomologists of the experiment station of the Hawaiian Sugar Planters' Association, who discovered the virus in the bodies of dead army worms, said this is the first time it has been recorded anywhere in the world. They do not know its source.

The scientists are hoping the virus will spread. The army worm has continued to be a serious problem despite man-made counter measures.

F. A. Bianchi, the station's senior entomologist, reported the virus forms crystals in the worm's body fluids. The worm turns yellow and the merest touch will cause the body to liquefy.

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HORTICULTURE

Old Seeds May Still Produce

➤ GERMINATION of last year's seeds this spring depends on the kinds of seeds and the way they were stored.

Celery, lettuce, parsnip and onion seeds do not keep as well as bean, beet and tomato seeds, Cornell University seed analysts report.

If the seeds were stored in a dry, cool place during the winter, they will be much more likely to produce a good crop than if they were stored in a hot, humid kitchen.

Seeds can be tested by making a trial planting in a flower pot early in the season. If a large amount of seed is involved and if a large acreage is to be planted, it will pay to send a sample to the Seed Testing Laboratory at the Experiment Station at Geneva, N. Y., where it can be tested scientifically under carefully controlled conditions.

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PUBLIC HEALTH

Two-Day Fog Kills 1,000 in London

➤ A DENSE fog lasting just over two days killed almost 1,000 persons in Greater London this winter, Dr. W. P. D. Logan, chief medical statistician of the General Register Office reports in *British Medical Journal* (March 31).

The fog occurred during Jan. 4 to 6, 1956. It is the third major killer fog in London since 1948, Dr. Logan points out. The December, 1952, fog killed almost 4,000 persons.

Babies and the elderly were the chief victims in the 1956 fog. Bronchitis was listed as medical cause of the deaths.

Before 1948 only five "incidents" of increased deaths associated with severe fog could be found in London mortality records for the past 115 years.

The fact that three incidents have occurred in the past eight winters is "disquieting," Dr. Logan states.

Either the atmospheric pollution has become more toxic or there are more persons especially vulnerable to its effects, he suggests. He calls the thousand deaths this January a "stern reminder that this major public health problem has not yet been solved."

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ENTOMOLOGY

Tick Strain Resists Once Good Insecticide Control

➤ THE BROWN DOG TICK has now joined the ever-growing list of insects that have developed a strain resistant to insecticides.

A pest of dogs in both the home and kennel, the brown dog tick was thought to have been brought under control by the use of the insecticide, chlordane. A resistant strain, however, is now increasing rapidly in New Jersey, Dr. Elton J. Hansens of the Rutgers University department of entomology, New Brunswick, N. J., reported.

The failure of chlordane to control the resistant ticks necessitated studies of new control measures. These tests show that lindane, a close relative of chlordane, does kill the ticks and provide effective control, Dr. Hansens said.

Both insecticides are chlorinated hydrocarbons and experience with resistant flies has shown that, when a pest becomes resistant to one of these chlorinated hydrocarbons, it is likely to become resistant to the others.

"We can only hope," Dr. Hansens concluded, "that this will not be true with the brown dog tick. If, however, they become lindane-resistant, too, it will be necessary to seek other materials which will kill the ticks and not harm the dog on which they live."

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AERONAUTICS

Toy Shelf to Stratosphere

Weather balloons blown behind the Iron Curtain have roused new interest in old sport. Balloons today are used for weather observation, propaganda, and reconnaissance.

By HENRY WHITE PIERCE

➤ SOMEWHERE IN Europe a balloon drifts eastward to accomplish its mission in the battle for men's minds.

From a lonely desert outpost a dozen scientists watch a balloon float skyward to snatch hidden facts from the upper atmosphere.

And in the heart of a large city a bright red balloon fluttering at the end of a piece of twine delights a small boy.

Physicists, engineers, geographers and even doctors use balloons every day. But the high-flying bags were originally used more for sport than science. The balloon has evolved from a harum-scarum adventurer's toy to play a vital part in what may be the world's most deadly game.

What balloons have lost in popular play they have gained in scientific application. Pilotless, they soar 25 miles into the thin stratosphere to take weather readings. Rockets launched from the big gas bags attain even higher altitudes. Balloons are used in mapping, for wartime air cover and to carry freedom messages behind the Iron Curtain.

New developments in ballooning are continually being disclosed. The Army Signal Corps has recently announced an "express" balloon that rises about twice as fast as conventional types. Its greater vertical speed means the new balloon is less likely to drift out of radio range during its ascent. It will also speed up observations.

Another possible development may be using a balloon to launch a man-made satellite. The present plan is to shoot the small moon into its orbit by a three-stage rocket. Later experiments, however, may possibly find balloons carrying satellites 15 miles up, from which point a rocket would shoot the spheres the remaining distance. This would save great amounts of fuel.

Affects Your Life

In some ways, the balloon affects your daily living much more directly than you may think. Tomorrow's weather is predicted with the help of small balloons equipped with instruments for recording temperature, pressure and humidity. The information is automatically radioed down to meteorologists who use it in learning weather trends and for long range forecasts.

Striking success has been reported in launching rockets from balloons. The Deacon, launched from the General Mills Skyhook Balloon at an altitude of 75,000 feet, reached a height of 60 miles. The same rocket launched from sea level has gone up only 20 miles. The thinner atmosphere at 75,000 feet reduces friction to such an extent that rockets may fly far higher than if launched from sea level.

One of balloons' most interesting applications is in the field of cosmic ray measurement. When cosmic rays strike the atmosphere, the primary particles become ionized, and their nature is changed. They are then called secondary cosmic rays. To measure the original rays, balloons are sent up to heights of 120,000 feet where they can remain for as long as 10 hours. Instruments swinging beneath the Navy's loft-seeking giant sky-hook balloons are stealing secrets from cosmic rays 23 miles above the earth.

Often blamed for flying saucer scares, balloons actually vary greatly both in shape and in size. They can be pear-shaped or nearly spherical, range from a minimum of one foot in diameter to a maximum of 200 feet. The balloons which recently aroused Russia were 39 feet across.

None of the airborne sacks has great lifting power. The biggest can carry a ton and a half to a height of 60,000 to 70,000 feet. The weather balloons that recently drifted behind the Iron Curtain traveled at about 50,000 feet, higher than commercial airplanes fly. If they remain too low, the balloons are automatically destroyed.

Weather balloons can be sent up in such great numbers that some become lost, accidentally penetrating the Iron Curtain even when extra precautions are taken. One reason so many of these airborne weather stations can be released is the cheapness of the material used. Modern balloons cost about one-fiftieth as much as their counterparts of 20 years ago. The weather balloons of yesterday were made of rubberized fabric that cost $2.00 a square yard. The polyethylene plastic of many of today's floaters costs only four cents a square yard.

The Montgolfier brothers flew the first crude hot-air balloon in 1783, and soon

BALLOON LAUNCHING—A newly designed Air Force meteorological balloon is here being launched at Vernalis, Calif. The bag is being filled with gas just prior to its release.

daredevil sportsmen seeking thrills among the clouds became the first real pioneers of aviation. With their spectacular, sometimes inspiring, often clownish escapades, they lit new corridors of science.

Ballooning first aroused popular excitement in the early 1900's. By that time, hydrogen had succeeded hot air as the lifting agent. But hydrogen is highly inflammable, a drawback which culminated in disaster three decades later when the historic Hindenburg burst into flames killing 36 persons.

The great, shining plastic sacks of today are usually filled with heavier but noninflammable helium.

Twenty-five years ago it was commonly believed that the balloon would outstrip the airplane as a commercial vehicle. In 1932 a metropolitan newspaper editorialized: "Climbing 10 miles into the sky, we shall soon fly from New York to Paris in 10 hours, safe from rarefied air in sealed cabins, while zooming along at dizzy speed of 400 miles an hour."

The story was referring to dirigibles.

International Sport

During the first quarter of the 20th century, balloon racing became a sport of international scope.

The breakneck, cross-country races originated in France, but interest soon swelled to world-wide proportions. The first international race, held in October, 1906, started from Paris. The idea was to see how far the balloons could drift.

The balloons started westward, then veered to the north. Some landed along the French coast. Others drifted across the Channel to England.

This first race was won by an American, Frank P. Lahm, a U. S. Army lieutenant. Lahm landed near Scarborough, England, and brought home the coveted James Gordon Bennett trophy.

The development of heavier-than-air transportation, however, cost the sport of ballooning its popularity. Today the only balloons generally available for recreation can be bought on the street for a few cents.

Daring feats are still performed in the balloon world, but they are done in the name of science. Late this fall the Air Force plans to drop men by parachute from balloons 17 miles above the New Mexico desert. This will be twice as far as parachutists have ever jumped before.

The purpose of the experiment will be to obtain information for developing safe equipment and procedures for bailing out of fast, high-altitude airplanes.

Despite all its scientific uses, ballooning as a sport still survives. Balloon licenses are issued to the enterprising. If you wish to try a jaunt or two yourself, you must have at least six hours of instruction and pass a written test that covers meteorology, navigation and map reading.

Of course, you must also demonstrate your ability to pilot a balloon.

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ADMINISTRATION OF MEDICAL AND PHARMACEUTICAL PATENTS—Archie M. Palmer—*National Academy of Sciences-National Research Council*, Publication 375, 69 p., paper, $2.00. One of a series of publications on nonprofit research and patent management based on extensive survey of current policies, practices and procedures.

THE ANNUAL SURVEY OF PSYCHOANALYSIS: A Comprehensive Survey of Current Psychoanalytic Theory and Practice, Volume III, 1952—John Frosch and others Eds.—*International Universities Press*, 682 p., $10.00. Although intended for physicians, this volume is written in a way to be understandable to parents and teachers as well.

BIRTHPLACE OF THE WINDS—Ted Bank II—*Crowell*, 273 p., illus., $4.50. A readable account of a two-man expedition from the University of Michigan, Operation Shoestring, to study plant life, the people, cave burials and something of the history of the distant Aleutian Islands.

CLOSED-CIRCUIT AND INDUSTRIAL TELEVISION—Edward M. Noll—*Macmillan*, 230 p., illus., paper, $4.95. Presenting information about these TV systems and suggesting some of the ways in which such systems can serve modern needs. A text for technical institutes and adult education courses.

DESIGN AND TESTING OF FLEXIBLE PAVEMENT—A. C. Benkelman, Chairman—*Highway Research Board*, Bulletin 114, 87 p., illus., paper. $1.65.

THE DISCOVERY OF WRANGEL ISLAND—Samuel L. Hooper—*California Academy of Sciences*, Occasional Papers No. XXIV, 27 p., illus., paper, $1.00. This Arctic island which seemed inaccessible and valueless when it was discovered, now lies on the most direct air routes between the capitals of Europe and those of the New World. Discoverer was the author's father, Captain Calvin L. Hooper.

FOR PEBBLE PUPS: A Collecting Guide for Junior Geologists—Dolla Cox Weaver—*Chicago Natural History Museum*, 95 p., illus., paper, accompanied with box of mineral specimens, $1.25. Telling junior collectors what rocks are important for a collection, how to find them and how to study, care for and display them.

A GUIDE FOR THE STUDY OF EXCEPTIONAL CHILDREN—Willard Abraham—*Porter Sargent*, 276 p., paper, $3.50. Intended to help parent-teacher and other groups to aid the handicapped.

HISTORY OF AMERICAN TECHNOLOGY—John W. Oliver—*Ronald*, 676 p., $6.50. Presenting an integrated picture of the influence of developing science and technology on the progress of our civilization.

LAND ACQUISITION 1955—David R. Levin, Chairman—*Highway Research Board*, Bulletin 113, 83 p., illus., paper, $1.80. Discussing right-of-way problems.

MIGRATION AND MENTAL DISEASE: A Study of First Admissions to Hospitals for Mental Disease, New York, 1939-1941—Benjamin Malzberg and Everett S. Lee with an introduction by Dorothy S. Thomas—*Social Science Research Council*, 142 p., illus., paper, $1.50. A finding of this study is that incidence of mental disease is higher among migrants than nonmigrants either because poorer risks migrate or because of the strain of movement.

MINERALS YEARBOOK 1953: Volume II, Fuels—T. W. Hunter and others—*Govt. Printing Office*, Bureau of Mines, 478 p., illus., $2.25. The total new energy supply in the United States in 1953 increased more than one percent over 1952 to overcome the decline of the previous year.

THE NEUROSES IN CLINICAL PRACTICE—Henry P. Laughlin—*Saunders*, 802 p., $12.50. Describing the neuroses in such a way that they are readily identified. The patient's feelings are often given in his own words.

A NEW PYGIDIUN CATFISH FROM ARGENTINA—J. T. Nichols—*American Museum of Natural History*, Novitates 1760, 3 p., illus., paper, 25 cents. This new species of catfish was found at an elevation of 8,000 feet in a dry part of Argentina.

NUCLEAR SCIENCE AND ENGINEERING: The Journal of the American Nuclear Society, Volume 1, Number 1—J. G. Beckerley, Ed.—*Academic*, 102 p., illus., paper, Bimonthly. $2.00 or $10.00 per volume. Intended to aid in the integration of the several disciplines constituting nuclear science and technology.

THE PSYCHO-MEDICAL GUIDE TO A LIFETIME OF GOOD HEALTH: The Promise of Psychosomatic Medicine—Curt S. Wachtel—*Psycho-Medical Library (Citadel)*, 318 p., $5.00. Explaining in non-technical language the forces between body and mind which may produce illness and cure.

STARTING RIGHT WITH BEES: A Beginner's Handbook on Beekeeping—Original material by M. J. Deyell and the late E. R. Root, revised and edited by Walter Barth—*A. I. Root Company*, 100 p., illus., paper, 95 cents. Beekeeping, the author says, is an occupation for old or young, rich or poor, men or women, tired or vigorous.

SURVEY OF OPHTHALMOLOGY: Volume 1, Number 1—Frank W. Newell, Ed.—*Williams & Wilkins*, 104 p., paper, six times a year, $2.00 or $9.00 per volume. A review journal, directed toward the practitioner, composed of condensations rather than abstracts and combined with editorial evaluation.

SURVEYS IN MECHANICS: A Collection of Surveys of the Present Position of Research in Some Branches of Mechanics, Written in Commemoration of the 70th Birthday of Geoffrey Ingram Taylor—G. K. Batchelor and R. M. Davies, Eds.—*Cambridge University Press*, 475 p., illus., $9.50. Containing ten specially written articles plus a biographical note on Sir Geoffrey.

SURVIVAL RATES, LONGEVITY, AND POPULATION FLUCTUATIONS IN THE WHITE-FOOTED MOUSE, PEROMYSCUS LEUCOPUS, IN SOUTHEASTERN MICHIGAN—Dana P. Snyder—*University of Michigan, Museum of Zoology*, No. 95, 33 p., illus., paper, 50 cents.

TAXONOMIC APPRAISAL AND OCCURRENCE OF FLEAS AT THE HASTINGS RESERVATION IN CENTRAL CALIFORNIA—Jean M. Linsdale and Betty S. Davis—*University of California Press*, University of California Publications in Zoology, Volume 54, No. 5, 77 p., illus., paper, $1.50. A study of animals on 1,600 acres of protected land resulted in the collection of 24,759 fleas from 2,459 mammals.

TEXTBOOK OF CHEMISTRY—Edward Mack, Jr. and others—*Ginn*, 2d ed., 854 p., illus., $6.50. A college text intended to broaden and deepen the student's knowledge of scientific facts, outline the precise nature of scientific evidence and emphasize the rigor of scientific thinking.

TWO OCCURRENCES OF FALSE KILLER WHALES, AND A SUMMARY OF AMERICAN RECORDS—Harvey R. Bullis, Jr. and Joseph Curtis Moore—*American Museum of Natural History* Novitates 1756, 5 p., paper, 25 cents.

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ENTOMOLOGY

NATURE RAMBLINGS

by Horace Loftin

Insect Athlete

➤ IF THERE ever are Olympic games for the insect world, a flea will probably leap away with all honors in the broad jump and high jump. Of course, the winning leap will have to be decided by comparing the size of the insect to the distance it springs. Otherwise, the minute fleas would be far outdistanced by the two or three-inch grasshoppers.

Scientists looking into the matter find that a flea whose pair of jumping legs are about 1/20 of an inch long can make a horizontal leap (broad jump) of as much as 13 inches. A high-jumping flea of this size can leap as much as 7¾ inches straight up.

If length of legs were the only thing involved, on this scale a human athlete with legs three feet long might be expected to make a broad jump of 700 feet and a high jump of at least 450 feet!

In the insect Olympics, no nation would have a great advantage over the others, since fleas — there are some 500 species known to science—are practically worldwide in distribution. Even animals of the remotest north have their full complement of these parasites.

About the only way to be sure not to be troubled by flea bites is not to be a mammal or a bird, for fleas restrict their unwanted friendship to these two classes of animals exclusively. Presumably, mammals have suffered even longer than birds from fleas, too, since most experts agree that the flea species that infest birds were derived from fleas of mammals.

Moles and shrews may hold something of a record for persistent suffering. Even

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today they bear a genus of fleas, *Palaeopsylla*, that has been found in amber in which the insects were trapped during the Oligocene period of prehistory.

Fleas are wingless insects—though their tremendous power of leaping helps make up for that lack. They can be readily told from their fellow contributors to human suffering, the lice, because they are flattened from side to side or laterally. The lice are flattened top to bottom, or dorso-ventrally.

If kept warm enough, fleas lay eggs all year round. The eggs fall into the litter of the host animal's nest or bedding, and hatch into tiny worm-like larvae in from one to four days. The larvae are non-parasitic, living off organic matter in the trash. According to the temperature, the larvae spin a cocoon in seven to 30 days after hatching, and emerge from the cocoon as adults 13 to 44 days later. From egg to adult takes about 28 days as a fair average.

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CHEMISTRY

New Vistas Opened in Chemistry Research

➤ A METHOD for studying free unstable atoms, opening up an entire new field of investigation in chemistry, was advanced by Dr. Herbert P. Broida, National Bureau of Standards research physicist.

Free radicals, atoms with very short life spans, have until now been too elusive for leisurely scrutiny by scientists. If, as Dr. Broida believes, free atoms can be trapped at extremely low temperatures, new knowledge of the nature of the atoms will enable scientists to lay the groundwork for fresh advances into technological fields.

Speaking at a meeting of the Philosophical Society of Washington, Dr. Broida outlined evidence for his theory.

A free radical is an atom with an unpaired electron. Many react quickly in chemical combinations and are therefore very unstable. Evidence indicates these atoms can be trapped in solids at temperatures 200 degrees below zero centigrade.

Some scientists have speculated that the new line of research will make possible development of a lighter, more powerful rocket fuel.

Science News Letter, April 14, 1956

• RADIO

Saturday, April 21, 1956, 2:05-2:15 p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your CBS station.

Dr. Charles Marsel, associate professor of chemical engineering, New York University College of Engineering, New York, N. Y., will discuss "Rockets, Missiles, and Satellites."

Questions

ARCHAEOLOGY—Where has a lost Greek city been unearthed? p. 231.

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MEDICINE—How can the sex of an unborn baby be predicted? p. 226.

What proportion of stomach ulcers harbors cancer? p. 226.

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PHYSICS—How powerful will the synchroclash be? p. 227.

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PLANT PHYSIOLOGY—How does a plant tell time? p. 226.

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PHOTOGRAPHS: Cover and p. 229, Armour Research Foundation; p. 227, George A. Smith; p. 231, Princeton University; p. 234, U. S. Air Force; p. 240, Bakelite Co.

TO MEN BETWEEN 25 AND 45...

How much time do you have before all hope of success passes you by?

There are a few striking examples of men who have achieved success in business long after reaching middle age . . . but for most men the years between 25 and 45 are crucial.

THERE are thousands of men reading this message right now who are headed for the frustrations and disappointments of mediocrity. They'll go part way up the ladder and down again by the time they're fifty years old. They'll be executive material in their twenties, thirties and forties—clerks in their fifties. They'll have high hopes for themselves and their families while they're young; and only struggle, skimping and regret later on when their earning power should be at its height.

Make no mistake about it! *Every day* you let slip by without making an effort to increase your knowledge of business is a day you *lose ground* in the fight to get ahead . . . a day that the dangerous habit of "putting things off" grows stronger . . . a day that multiplies into *years* with incredible speed.

It's easy to understand why so many promising men are lured into wasting what should be the most fruitful years of their business lives: Promotions and raises come regularly, almost automatically, early in their careers. They're satisfied with their progress, and think the future will somehow take care of itself.

But the day comes with shocking abruptness when their effortless progress ends. Salary increases and promotions no longer come their way. And they begin to see other men elevated to positions they thought would some day be theirs.

In the case of some of these men, all hope of success is gone. Others may still have time *if they act at once*... because it's remarkable what even a single year of systematic guidance can do for men who are really determined to get ahead.

A Scientific Self-Improvement Program for men Who Want to Forge ahead in Business . . . Now!

How about *you?* Is your natural ability being wasted in a blind concentration on mere routine tasks? Are you sitting back contentedly, vaguely promising yourself that some day you'll take steps to bring yourself forcefully to the attention of management? Are you losing precious time and thousands of dollars that you'll never be able to make up? *How many years do you have before all hope of success passes you by?*

If you realize the importance of acting while time is still on your side, the Alexander Hamilton Institute can help you accomplish more in *months* than you would, ordinarily, in *years.*

Send For Your Free Copy of "Forging Ahead in Business"

If he has the will to succeed, there is no reason why any man of normal intelligence should suffer the smart of failure.

"*Forging Ahead in Business*" tells you why! This inspiring, 48-page book explains how you can bridge the gap between your present job and the one above—how you can *prepare now* to meet the challenge of future opportunities. It examines the popular fallacies about business that have stalled the progress of so many men, and it points the way to new and exciting avenues of achievement.

If you are genuinely interested in knowing more about how the Alexander Hamilton Institute can help you in your efforts to get ahead faster, simply fill out and return the coupon. "*Forging Ahead in Business*" will be mailed to you without cost.

ALEXANDER HAMILTON INSTITUTE 71 West 23rd Street New York 10, New York

AN INVITATION . . . AND A CHALLENGE!

From the earliest days of American industry right up to the present time, there has been a continuing need for executives. There have always been more good jobs than good men! The demand for men with administrative ability is particularly keen right now.

Today—as in 1909 when the Alexander Hamilton Institute was founded—Business is asking: "Where can we get broadly trained men who understand the fundamentals of all departments of business?"

And ambitious employees are asking: "Where can we obtain the training in the underlying principles of business which will qualify us to handle a position of executive responsibility?"

"Forging Ahead in Business" was written to answer those questions.

MAIL THIS COUPON NOW!

Alexander Hamilton Institute
Dept. 434, 71 West 23rd St., New York 10, N. Y.
In Canada: 57 Bloor St., W., Toronto, Ontario

Please mail me, without cost, a copy of your 48-page book—

"FORGING AHEAD IN BUSINESS"

Name .....

Firm Name .....

Business Address .....

Position .....

Home Address .....

New Machines and Gadgets

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE SERVICE, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 826. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription

WRITING FLUID cannot be removed from paper even though it has been made invisible by eradication or water damage. The ink contains a luminescent additive that shows up under ultraviolet light. It is designed primarily for protecting business documents.

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SKYLIGHT PANEL is made of a glass fiber reinforced plastic. Designed for use in skylights, sidelights and window panes, the building panel is described as erosion resistant. It is the product of six years of research.

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CONTACT CEMENT for decorating lamps, mirrors or furniture can be used with any fabric, plastic or leather. The liquid adhesive is brushed on to a wood, metal or glass surface and allowed to dry for 30 minutes. Decorative materials will stick to it instantaneously.

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HIDDEN DRAWING BOARD folds away into the center drawer of a desk and pops out when desired. The drawing-board unit can be bolted or screwed to any conventional desk or table top. It is available in two sizes and three colors.

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CIRCULAR POOL, shown in the photograph, can be set up by two persons in a few hours and requires no excavating. The ready-made pool has a wire fence and a plastic liner that fits onto the fence. The plastic bumper is blown up with a portable vacuum cleaner and the pool filled with water. It can be stored in two cartons.

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WOOD RULE has special markings on its reverse side that permit anyone to lay out rafters without a framing square. The six-foot-long, folding carpenter's aid can also be used for finding the rise of a roof.

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U-BEND SCREWDRIVER is designed for industrial or home use. It has a swivel handle and features a unique U-bend in its shaft for faster performance. The screwdriver also has a no-slip tip.

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AUTO PLATFORM to keep baby safe in the back seat converts the rear seat into a play pen. The platform is suspended from the front seat and level with the rear seat. It will telescope to make rear seat space for a passenger, and can also substitute for a luggage carrier or table.

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Do You Know?

Asparagus is a perennial crop and may be productive for from 15 to 20 years.

The American aircraft industry produced about 13,000 *planes* during 1955.

A *hydrogen bomb* shock wave racing across Chicago at 1,000 mph would destroy property values at a rate of a billion dollars a second.

Tea growers in India are using an American *miticide* to control foliage-eating red spider mites.

The rubber industry uses more than 80,000 tons of *sulfur* annually.

Yellow fever was first diagnosed in the Americas but it may well have originated in Africa.

The only creatures to resist mastery by man, except perhaps for a few of the rodents, have been *insects.*

The U. S. Fish and Wildlife Service operates 91 *fish hatcheries.*

Hypericum, a common ornamental shrub weed often called St. John's wort, yields a substance which, when purified, may prove as effective as penicillin.

At least 25,000,000 Africans are suffering from *yaws.*